1.3 Image Matrices and Thresholding

Matrix and Matrix Transpose

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{bmatrix} \qquad A^T = \begin{bmatrix} a_{11} & a_{21} & \cdots & a_{m1} \\ a_{12} & a_{22} & \cdots & a_{m2} \\ \vdots & \vdots & \ddots & \vdots \\ a_{1n} & a_{2n} & \cdots & a_{mn} \end{bmatrix}$$

Matrix Thresholding

$r > 0$

$$b_{ij} = \begin{cases} a_{ij}, & \text{if } |a_{ij}| \geq r \\ 0, & \text{if } |a_{ij}| < r \end{cases}$$

Percent Reduction & CR

$$\text{Percent Reduction} = \frac{100(mn-k)}{mn}$$

$$\text{Compression Ratio} = mn/k$$